Party ideology and policies where corruption is widespread: evidence from local governments

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MSc. in Economics 2016/2017

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Abstract

This dissertation studies the effect of mayors aligned with a centre left presidential coalition on policy outcomes and corruption. I use Regression Discontinuity Design in Brazilian municipal elections for two mayoral terms, from 2001 to 2008. Theories about politician´s behaviour, include ideological and self-interested motivations, although previous studies analyse it separately. Results indicate that municipalities aligned with the president's coalition receives more transfers but are not more corrupt and allocate resources differently.   Therefore, even in the context of   institutional fragility and corruption, politician's preferences about policies can be   relevant   in   the   provision   of   public   services.

1. Introduction

How relevant politician's ideology or preferences is to determine policies at government is still an open debate. Models that study the relationship between politicians motivations and government, often assume that politicians only care about winning the office to extract rents, whether monetary or self-esteem (Besley, 2006). These different incentives, both the ideological and self-interested, have been broadly analysed, but, can all of them be present in the same party system at the same time? Through which channels can interact it? The motivations and incentives of politicians are at the core of the political economy, and these are important questions because it helps to understand the welfare consequences of government intervention.

This dissertation addresses these question, analysing the effect of being aligned with a centre left president´s coalition on policy outcomes in Brazilian municipalities. Brazil offers an ideal framework to do this. It is one of the most unequal countries in the world and since 2003 experienced an unprecedented reduction in income inequality[1] together with the first-time victory of a centre left president (Lula da Silva - *Partido dos Trabalhadores* (PT). Along with this, during the last decade, a great amount of corruption scandals have come to light, both at the local and at the national level. Therefore, it has been pointed out that politicians have other motivations than ideology (Brollo et al., 2013; Ferraz & Finan, 2011).

At the national level, the main challenge to identify the causal effect of political parties on economic outcomes is the construction of the counterfactual. Indeed, reduction in inequality was common in other countries in Latin America. At the local level, arise the problem that political parties are not randomly allocated to municipalities. If voter´s preferences determine the change in the social policies in Brazil, the correlation between a centre left coalition at government and the pro-reduction in inequality policies would be spurious.

To solve this problem, I address the question of the importance of ideology of political parties in policy outcomes in Brazilian municipalities using a Regression Discontinuity Design (RDD) in context of close elections, where the mayoral candidate of the centre left coalition barely loses

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[1] Gini coefficient decreased from 0.58 to 0.51 between 2002 and 2014 ('SEDLAC - STATS', 2017)

or win the municipal election. Brazilian institutional framework is one of the most decentralised in the world, where municipalities play a fundamental role in the provision of critical public services. Besides, data from Brollo et al. (2013) includes objectives measures of corruption at the local level in Brazil.

Findings of this dissertation, in line with Brollo & Nannicini (2012) results for a long a period, show that mayors aligned with president´s coalition receive more discretionary federal transfers in the last two years of government during 2001 and 2005 mayoral terms. These same municipalities aligned with the president´s coalition, despite having more resources available are not more corrupt. Instead of that, I find evidence that mayor´s aligned with the president´s coalition spend more in education, one of the main responsibilities in the provision of public goods in Brazilian local governments.

Therefore, as Brollo & Nannicini (2012) pointed out in their theoretical model, the president can support aligned mayors motivated on the potential rents that this mayor can extract for him. However, I present evidence that suggests that president support to aligned mayors can also be driven by the implementation of specific policies in municipalities.

This dissertation is structured as follows. Section 2 reviews the related literature and discuss the theoretical framework. Section 3 describes the institutional framework and the data. Section 4 illustrates the econometric framework. Section 5 presents the results. I conclude with Section 6.

2. Literature review and theoretical framework

2.1. Literature review

This paper contributes to the literature that analyses the relationship between political outcomes and electoral results using RDD. Seminal work of Lee, Moretti, & Butler, 2004 compare policies between Democrats and Republicans House representatives and do not find a convergence effect on voting records.

Although there is vast literature that finds partisan effects at the state level (Besley and Case, 2003), evidence at the local level it is mixed. Looking for partisan effects at the local level, as this work does, Ferreira & Gyourk (2009) analyse differences on public spending between Democrats and Republicans among US mayors. Ferreira & Gyourk (2009) results are based on 2,000 mayoral elections, between 1950 and 2000, in 400 US cities. They do not find any difference between Democrats and Republicans mayors on local public finance outcomes such as total revenues and taxes, the share of intergovernmental transfers, public employment, total expenditure and crime rates. Besides, they discuss three different channels that can lead their results such as more homogeneity at the local level, more constraints and fewer possibilities of sending a targeted message to citizens. Finally, the explanation that has more empirical support is that constraints, such as competition with nearby municipalities, limit the development of different public policies.

On the contrary, Pettersson-Lidbom (2008) analyse differences between socialist and no socialist parties in 228 Swedish municipalities over 21 periods. Pettersson-Lidbom (2008) find that left-wing Swedish parties spend and tax more than right-wing governments. Also in US mayor elections, Gerber & Hopkins (2011) find differences between Democrat and Republicans in areas in which local governments face fewer constraints from higher levels of government. Their results indicate that mayors spend less in public safety, but they do not find differences in other areas such as tax and social policies. This paper contributes to this literature in several ways. First, there is no evidence of the effect of political parties' ideology on policies in less developed countries, and in a context of high inequality and high incidence of corruption.

Besides, unlike US institutional framework, Brazilian municipalities have major political power and play an essential role in the provision of relevant social policies such as education and health. Finally, this dissertation analyses the effect of a president´s coalition around a differentiated left-wing party, while Pettersson-Lidbom (2008) build two ideological blocs in a multi-party system.

This paper also contributes to the literature that analyse models of rents extraction by politicians. Brollo & Nannicini (2012) analyse the effect of mayor alignment on federal transfers in Brazil between 1996 and 2008. They find that mayors aligned with president´s party or president's coalition receive more transfers in the last two years of mandate.

Several papers analyse the relationship effects and determinants of corruption, using data from disclosed audit reports of Brazilian municipalities. Ferraz & Finan (2008) compare the effect on electoral outcomes of equally corrupted mayors with different timing of the information disclosed, before and after the election. They find that accounting for the level of corruption, expose corrupt politicians reduce the probability of re-election. Using the same database, Ferraz & Finan (2011) compare the corruption behaviour of politicians that are in their first and second term, in a framework that allows for one re-election. Ferraz & Finan (2011) find that mayors that cannot be re-elected misappropriate 27 percent more resources than mayors that are in their first term. They also find that this effect varies according to local institutions and the presence of media.

Brollo et al. (2013), using a fuzzy RDD to analyse the effect of extra federal transfers., that are distributed to municipalities according to population thresholds, on the politician behaviour. They find that local governments that receive larger resources are involved in corruption acts with higher probability and increase the share of resources misappropriated in that corruption acts. -Besides, these extra resources reduce the quality of the pool candidates, because the value of political rents is higher in candidates with lower ability. As a result, although mayors that received extra funds are more corrupt, they are not electorally punished. This work contributes

to the literature that analyses political behaviour introducing the ideology of a coalition of parties as a relevant determinant of corruption and allocation of discretionary transfers.

2.2. Theoretical framework

The determinants of public policies are a central question in modern political economics. Following Persson & Tabellini (2002), politician behaviour can be modelled in three ways. First, candidates can only be motivated by winning the election, only with the objective of holding the office (Electoral Competition). They can also have the ability of extract rent through corruption (Agency models). In both cases the median voter it is pivotal. Build in these theoretical models, Brollo & Nannicini (2012) emphasise that the main channel that drives the distribution of federal resources in favour of local political allies are the future benefits (in electoral or rent terms) that those allies can generate to the presidents. Moreover, Brollo et al. (2013) find that extra resources to municipalities can exacerbate political agency behaviours, and increase corruption.

Finally, politicians can be guided by the ideology of the party (Partisan politicians), and they desire to implement policies according to their ideas and principles. In this context, ideology can be an important determinant of the public policy outcome.

3. Background and data

3.1. Institutional background

Brazil is a federal republic with a presidential system. It has 27 states and over 5500 municipalities. It runs elections every two years. In 1998, 2002 and 2006 ran federal elections and in 2000 and 2004 municipal elections. During federal elections, president, state governor and legislature are elected. In municipal elections, mayors (*Prefeitos*) and municipal legislature (*Camara dos Vereadores*) are directly elected. Majority rule decides in elections that exceed 200,000 eligible voters, that means that if any of the candidates do not reach 50% percent of the nominal votes, a second round takes places one month later with the two candidates who receive the highest number of votes in the first round. Otherwise, candidates are elected through plurality rule, where the most voted candidate in the first round is elected. Since 1996 electoral reform, mayors and presidents can be re-elected for one additional term.

Brazilian is a multiparty system, in which all the parties are far from getting the absolute majority in the national congress. In 2000 and 2004 municipal elections, 30 and 27 parties took part. During the period of analysis, the most important parties were PMDB (*Partido do Movimiento Democrático Brazileiro*), PFL (*Partido da Frente Liberal*) PT (*Partido dos Trabalhadores*), PSDB (*Partido da Social-Democracia Brasileira*). 2002 and 2006 federal elections left these four parties separated by 4 per cent of the seats, between 18 and 14 17 and 13 per cent, respectively. PT is ideologically different from the other three parties, and it is in the left spectrum (Lucas & Samuels, 2010). Differences between the other three parties are less clear (Lucas & Samuels, 2010), located in the centre (PMDB and PSDB) are centre right (PFL).

In 2002, PT won the Brazilian general election for the first time, and Lula da Silva was elected president, replacing Fernando Henrique Cardozo (PSDB), who ruled the country since 1995. Lula da Silva was re-elected in 2006, and he could build centre left stable coalitions during his two mandates. The number of municipalities won by PT also increase in this period, from 187 in 2000 elections to 411 in 2004. PMDB won the largest part of the parliamentary seats and

municipalities, and was an important part of federal government coalitions, being part of the two presidencies of Fernando Henrique Cardozo and of the second presidency of Lula da Silva.

3.2. Brazilian municipalities

Brazil is one of the countries that more decentralised the provision of public services in local municipalities, which indeed have high political power. Local governments play a fundamental role in the provision of education, health, transportation and local infrastructure, where the first two account for half of the budget. Municipalities revenues rely mainly on state and federal transfers and local revenues (such as taxes and fines) only represent 6% on average of the total revenues. Federal transfers represent 65% of the total revenues and are divided into constitutional transfers (determined by municipal population) and discretionary transfers (Brollo & Nannicini, 2012). Some constitutional statements relate to part of the transfers to specific spending in health or education, but mayors still have power decision to allocate spending (Ferraz & Finan, 2011).

3.3. Data and variables of interest

Elections

Data on electoral results is provided by the Brazil´s electoral authority (*Tribunal Superior Electoral*), and it is available on its website. The unit of analysis is the municipality. The period of analysis covers the 2000 and 2004 elections, that coincided with a PT president. From this source, I will build the treatment of the RDD, that states if the mayor is aligned with president coalition. As it is shown in figure 1, because of the gap between presidential and mayor terms, treatment is defined if the mayor´s party is part of the president´s coalition during the last two years of the mayor´s term. Table A1 describes parties included in government coalitions year by year. Data on mayor characteristics (age, gender and education) are also available in the Brazil´s electoral authority website.

Figure 1. Brazilian elections over the sample period

1998   2000   2002   2004   2006   2008

———————   Mayoral elections

- - - - - - -   Presidential elections
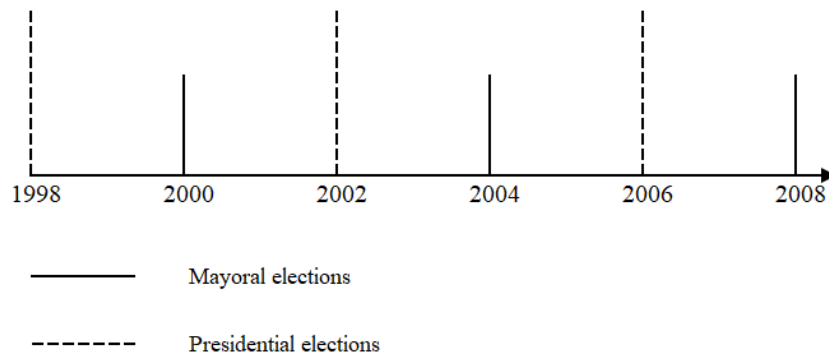
Policies

The Brazil´s federal National Treasury (*Tesouro Nacional*) database *Finbra* provides information about municipality's finances for all the sample period except 2003. This data provides the total expenditure and total revenues per municipality and year. I build an indicator of fiscal deficit, as total revenues minus total expenditure. I also consider the distinction between current and capital revenues. Besides, there is information available on 28 budget categories and several revenues divisions. From these categories, I analyse the expenditure in Education and Health. These are part of the core functions of local governments in Brazil. All transfers and expenditures are measured per capita and in 2000 Brazilian *reais*.

Following Brollo & Nannicini (2012) identification strategy of the effect of political alignment on federal transfers, I consider the federal transfers coded as *transferencias de capital*, which destiny is infrastructure projects and are mainly discretionary. The role of the president allocation the amount of transfers in municipalities is major, he has the last word and influences the process in many phases of the discussion process. Also according to Brollo & Nannicini (2012), the effect on political alignment is expected in the last two years of the mandate, because of electoral concerns.

Corruption

Data on corruption is available from Brollo et al. (2013). In 2003, the federal government start an anti-corruption programme, based on audits on municipalities randomly selected in open to the public lotteries. Information about corruption practices found in audits is available on the website of the independent organism that carried these out. Brollo et al. (2013) develop four indicators of corruption, based on two definitions: broad corruption and narrow corruption. For each definition, they define a binary variable (equal to one if at least an irregularity was found) and the fraction of resources involved in corruption acts. Broad corruption definition includes acts that could not only be interpreted as obvious corruption but also as bad administration.

The categories of irregularities included in broad corruption are (i) "illegal procurement practices", (ii) "fraud", (iii) "favouritism in the good receipt", (iv) "over-invoicing", (v) "diversion of funds" and (vi) "paid but not proven". Includes the (i) "severe illegal procurement practices" (ii) "fraud", (iii) "favouritism in the good receipt" and (iv) "over-invoicing".

Public employees

As an additional outcome of local policies, I analyse the effect of alignment with president´s coalition on public employees. Data of public employees at the municipal level is available on the survey Brazilian Municipalities Profile (*Perfil dos Municipios Brasileiros*) conducted by Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística, IBGE)*. Besides data on total public employees, I can separate temporary employees, an indicator of patronage (Brollo & Troiano, 2016). Data on public employees is only available for the term 2005-2008.

Local characteristics

Variables used to describe municipalities are from two sources. On the one hand, Population and 2000 census Gini coefficient are available in Brazilian Institute of Geography and Statistics

(*Instituto Brasileiro de Geografia e Estatística, IBGE).* On the other hand, urban population and mean years of education are available from the Brazilian Institute of Applied Economics Research (*Instituto de Pesquisa Economica Aplicada*).

4. Econometric strategy

4.1. Empirical question and econometric challenges

How important is political party's ideology to determine policies at the local level in Brazil? The relation of interest, between political party $P_{m,t}$ (aligned with centre-left president´s coalition) at government in municipality m at time t can be represented by the following equation:

$$Y_{m,t} = \beta_0 + P_{m,t}\beta_1 + \varepsilon_{m,t} \quad (1)$$

where $Y_{m,t}$ represents the outcome of interest (different fiscal policies or corruption) in municipality m at time t and $P_{m,t}$ is a dummy variable that it is equal to 1 if a mayor of party P won the election in municipality m immediately before of time t. Additionally, one could also add a series of covariates such as characteristics of the locality or characteristics of the candidate such as education level.

The main identification problem to estimate the equation (1) it is that whether political party P win or lose in a municipality is determined by voter´s preferences, not observable by the econometrician, that could also influence the political party´s platforms and policy outcomes. This identification problem generates an endogeneity problem because of omitted variables. As we probably do not have a random selection of party P´s mayors among municipalities, one could observe that political parties allocate public expenditures in different ways because voter´s preferences are different. Also, we can think that reverse causality may be important as well. Policies can affect voter´s preferences and voting behaviour, leading to votes for party P.

This problem is crucial because as it is derived from the Electoral competition and Agency models described above, policies directly depend on voter preferences. Politicians care only about winning elections (no about the policies she will develop), so political platforms and policies are determined by voter preferences. What we would like to assess it is whether mayors of party P perform different policies, beyond voter preferences and motivated by party preferences.

4.2. Identifying the impact of a centre left president´s coalition on policies

The ideal experiment would be to randomly allocate centre-left mayors aligned with president´s coalition and right-wing mayors in two samples representative of Brazil´s municipalities. If these two samples are statistically identical, including voting preferences, the difference between the outcomes of party P and right-wing mayor localities would be causal. Despite this ideal experiment is not feasible, comparing mayor elections in localities where party P barely win with localities where barely loose, regression discontinuity design (RDD) can identify causal impacts as in randomised experiments. This property of RDD was demonstrated by (Lee, 2008).

The main identification assumption of the RDD is that in scenarios of close elections, in the absence of the victory of a party P mayor policy, outcomes in both municipalities would be equal. Therefore, the municipality where mayor aligned barely lose the election is the counterfactual of the municipality where it barely won.

RDD exploits the fact that treatment status (victory of the mayor of party P) is a deterministic and discontinuous function of a covariate, x_i (vote share margin of victory, that is equal to the vote share of P candidate minus the vote share of the second candidate). That case, namely Sharp RDD, the probability that a P mayor won an election jump from 0 to 1 if she gets more votes than the other candidates, that is, if $x_i \geq 0$ (the margin of victory is positive).

The other key identification assumption of the RDD is that the relationship between the variables that the econometrician cannot observe (e.g. voter´s preferences) are continuous around threshold in the margin of victory. So, any discontinuity in the variable of interest (policies) it is not attributable to the unobserved variable and corresponds to an effect of treatment (P mayor). Discontinuity of covariates is a problem for the econometrician in cases where politicians can manipulate their share of votes to win the election and get $x_i \geq 0$. Consider the percentage of votes as a sum of two components $X = Z + \varepsilon$, where Z represents the systematic, predictable component of X that can depend on the characteristics of the

candidate or the quality of the campaign and ε is a random component (e.g. the weather the day of the election) with a continuous density. The existence of the random component ε determined the victory of aligned mayors with a very narrow margin of votes "as if by a flip of a coin" (Lee, 2008), and assign the treatment status as random. Otherwise, imagine a situation where a mayor could predict the exact share of votes and interfere in the voting process to increase its votes if she is not the "true" winner. Then, if this occurs in several elections, we would observe a discontinuity of X around 0. Consequently, municipalities, where an election was manipulated, were selected and the random component of selection eliminated.

If the assumptions mentioned above holds, RDD identifies the average treatment effects comparing municipalities where party P barely win (x_i just above 0) and barely lose (x_i just below 0). Using potential outcome notation, and the subscript m to identify a municipality, this can be stated in the following way:

$$\lim_{x_i \to 0^+} E[Y_i|X = x_i] - \lim_{x_i \to 0^-} E[Y_i|X = x_i] = E[Y_i(1) - Y(0)|X = x_i] \ (2)$$

There is no evidence of the kind of fraudulent behaviour in Brazil´s election. However, the advantage of this assumption is that a validity check can be empirically performed. As RDD can be analysed as random experiments around the threshold, all the variables that are determined before the treatment assignment should have the same distribution above and below the threshold (Lee & Lemieux, 2010). If political parties can manipulate their margin of victory, one would observe a discontinuity of the covariates around the threshold.

The equation (1) presented above can now be transformed in a local linear regression, in races where the margin of victory fall in interval $[-h, +h]$, as it is shown in the next equation:

$$Y_{m,t} = \pi_0 + x_{m,t}\pi_1 + P_{m,t}\pi_2 + \mu_{m,t} \ (3)$$

Where $x_{m,t}$ is the vote share margin of victory a candidate election at time t and in municipality m, $Y_{m,t}$ represents the outcome of interest (policies and corruption) in municipality m at time t and $P_{m,t}$ is a dummy variable that it is equal to 1 if a mayor aligned

with the president´s coalition won the election in municipality m immediately before of time t.

In equation (3) π_2 is the casual effect of interest. RDD identify the causal effect by distinguishing the nonlinearity of Y, when $x \geq 0$, in a smooth and linear function of x. An optimal bandwidth is calculated according to Calonico, Cattaneo, & Titiunik (2014) algorithm. As an additional check, I also show the results in intervals close to zero, with the margin of victory equal to 10 and 5 percent.

But the linearity assumption of the relation between the margin of votes and the outcome of interest above and below the threshold do not always hold. It is expected that, in a narrow neighbourhood of the threshold x (e.g. 5% of margin of victory), the sample average is a biased estimation of the true expectation of Y at the threshold. Then, it is preferred to estimate a version of equation (2), allowing non-linearities, such as a polynomial functional form:

$$Y_{m,t} = \alpha + x_{m,t}\delta_1 + PT_{m,t}\pi_1 + x_{m,t}\delta_2{}^2 + \cdots + x_{m,t}\delta_p{}^p + PT_{m,t}\pi_2{}^2 + \cdots + PT_{m,t}\pi_p{}^p + \mu_{m,t} \ (4)$$

Therefore, π_2 represents the pure effect of the president´s coalition on policies. This effect is estimated controlling for a pth-order polynomial in the margin of victory and for a pth order polynomial of the interaction between the margin of victory and the assignments variable.

5. Results

5.1. Sample selection

Data on municipal elections is available for 5555 and 5562 elections in 2000 and 2004, respectively. To implement my empirical strategy, I follow Brollo & Nannicini (2012) sample restriction, who also implement a RDD in the Brazilian multiparty system. I restrict the sample to elections where there are two candidates, one aligned with president´s coalition and the other not. This strategy is better than consider all the elections where one aligned and other no aligned candidate finished in the first two places, no matter the number of candidates. In this case, the treatment selection depends on the result of the election. Therefore, with the restriction I made in the sample, treatment depends only on pre-electoral variables. Analogously, I consider elections in municipalities with population under 200,000, where mayors are elected by plurality rule. This sample of 2,673, is restricted to 2,449 observations that have data on the main policies analysed. For the effect of political alignment on corruption, the database of 2,134 audit reports match with 474 elections of our restricted sample of 2,673 elections. Data on public employees is available for 1,481 elections, because is only available for 2005-2008 mayor term. Table 1 summarize the samples for each outcome considered in total and for each term.

Table 1. Sample selection

	Term		Total
	2001-2004	2005-2008	
Elections	5,555	5,562	11,117
Sample restricted	1,189	1,484	2,673
Sample restricted - policies	1,074	1,375	2,449
Sample restricted - corruption	270	204	474
Sample restricted - public employees		1,481	1,481

Notes. Sample is restricted to elections where there are two candidates, one aligned with president´s coalition and the other not in municipalities with less than 200,000 registered voters. Sample restricted for the different outcomes (policies, corruption and public employees) describes the number of municipalities with no missing values in each outcome.

5.2. Summary statistics

Table 2 summarize municipal and mayor characteristics in our sample of 2,449 and mean differences between the 1,111 municipalities aligned with the president´s coalition and the 1,338 nonaligned. RDD allows for selection in observable characteristics if none of those characteristics present discontinuities at the threshold. However, it is worthwhile to mention that the only difference that is significant is the proportion of mayors that are in their first term. That is because the number of mayors elected aligned with the president has grown during the period of analysis. This could be of special worried in the analyses of the effect of political alignment on corruption, because Ferraz & Finan (2008) show that facing re-election incentives decrease the incidence of corruption. Therefore, as a robustness check, I perform corruption analysis only for those mayors that are in their first term, and results remain unchanged.

Table 3 summarize corruption variables for the 474 audit reports from Brollo et al. (2013) database. The incidence of at least one episode of broad corruption, is 77 percent and 5 per cent of the resources audited (when this information is available. The probability of founding at least one episode of narrow corruption is 44 per cent, these episodes involve on average 2 per cent of the resources audited. These 474 audit reports correspond to 223 mayors aligned with the president´s coalition and 251 no aligned.

Table 2. Summary statistics of mayors and municipalities

| | President´s coaliton | | |
	Alligned	Unalligned	Difference
Mayoral characteristics			
Male	0,94	0,93	0.00785
			(0.010)
High school complete	0,72	0,72	(0.018)
			0.00216
Age	47,42	47,08	0.33809
			(0.984)
First term	0,73	0,59	0.14598
			(0.019)***
Local characteristics			
Population	11774,01	11593,96	180.05354
			(605.482)
Adult years of schooling	3,84	3,84	-0.00098
			(0.048)
% urban population	53,92	52,83	1.09913
			(0.899)
GDP per capita (2000)	3992,61	3964,04	28.56842
			(174.778)
Gini coefficient	0,55	0,55	-0.00151
			(0.003)
North	0,05	0,06	-0.00998
			(0.009)
Northeast	0,32	0,32	0.00310
			(0.019)
Southeast	0,29	0,27	0.02721
			(0.018)
South	0,26	0,28	-0.01895
			(0.018)
Center	0,08	0,08	-0.00137
			(0.011)

Notes: This table compares the mean of mayor and municipal characteristics between aligned and no aligned mayors. These statistics were computed over the 2,449 observations that have no missing values on the policies analysed. The first column computes the mean for the 1,111 municipalities where the mayor is aligned with the president´s coalition. The second column computes the mean for the 1,338 municipalities where the mayor is not aligned with the president´s coalition. The third column reports the differences in means, and robust standard errors in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level

Table 3. Summary statistics of corruption

	Corruption (binary variable)	Fraction of funds
Panel A: Broad corruption		
Observations	474	441
Mean	0,77	0,05
Panel B: Narrow corruption		
Observations	474	441
Mean	0,44	0,02

Notes: This table presents the summary statistics of the sample restricted of 2,449 municipalities that have information in corruption for the variables, from the Brollo et al. (2013).

5.3. The impact of alignment with PT president´s coalition on policies

In this section, I present the results for effect of mayors aligned with the PT president´s coalition on different policy outcomes. Results are reported for OLS estimation (equation 1), local linear regression with optimal bandwidth calculated with Calonico, Cattaneo, & Titiunik (2014) algorithm, 10 and 5 percent margins of victory (equation 3) and in a cubic spline polynomial (equation 4). For all our regressions, include state and term intercepts and robust standard errors are clustered at the municipality level are presented in brackets.

Table 4 presents the effect of political alignment of mayors with president´s coalition on discretionary federal transfers mainly designated to infrastructure. Federal transfers are in 2000 Brazilian reais. As was previously shown by Brollo & Nannicini (2012), who analize a longer period, the effect of alignment on federal transfers is positive and significant for the all the specifications considered for all only for the last two years of the mandate. According to Brollo & Nannicini (2012) interpretation, the objective of this behaviour is to penalize mayors no aligned, "tying their hands for the next election". The difference, with respect to average level, is between 21% and 46%.

In what follows, I present the effect of political alignment with PT president on different policies. Despite receiving more federal transfers, there is no effect of alignment with president's coalition on corruption measured at the municipality level. The measures of corruption used are taken form Brollo et al. (2013) database and take into account the information disclosed in independent audit reports. Four measures of corruption are used: broad corruption (equal to 1 if at least one episode of broad corruption was found), narrow corruption (equal to 1 if at least one episode of narrow corruption was found) and the fraction of funds involved in corruption acts for both definitions (with is information is available). I do not a find an effect for any of these four indicators and in any of the RDD specifications estimated.

Table 4. The effect of political alignment on Federal transfers

Panel A: Transfers in the last two of mandate

	Last two-year transfers				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	5.26969	7.43008	9.95158	11.96166	16.33872
	(1.997)***	(3.712)**	(3.870)**	(4.598)***	(6.280)***
Observations	2,449	2,449	1,468	1,080	575
R-squared	0.159	0.166	0.178	0.194	0.232

Panel B: Transfers in the first two of mandate

	First two-year transfers				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	0.46077	1.777	4.12607	4.07635	5.67842
	-1.572	-2.932	-3.057	-3.286	-4.523
Observations	2,449	2,449	1,303	1,080	575
R-squared	0.105	0.121	0.139	0.152	0.156

Notes: Sample is restricted to races with two candidates. Regressions include state and term intercepts. This table reports the effect of mayor alignment with PT president´s coalition on federal transfers. Column 1 presents OLS estimation. Column 2 presents cubic spline polynomial approximations in equation (4). Column 3 presents RDD as in equation 3 with optimal margin of victory, 15 percent in panel A and 13 percent in panel B. Column 4 and 5 presents RDD as in equation 3 with 10 and 5 percent margin of victory. Last two-year transfers are the average federal transfers in the last two years of mandate. First two-year transfers are the average federal transfers in the first two years of mandate. Both dependent variables are in per capita real values in 2000 Brazilian reais. Robust standard errors, clustered at the municipality, level in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

As was mentioned in the previous section, there are more first term mayors aligned with the president´s coalition. Previous work (Ferraz & Finan, 2011) find that mayors that cannot re run for re-election have more incentives to misappropriate resources, so the fact the unbalance sample of mayors used in results of Table 5 could influence the relationship between alignment and corruption. Table 6 presents results of the effect of alignment with president´s coalition only for mayors who are in their first term. Results remains unchanged.

Table 5. The effect of political alignment on corruption

Panel A: Corruption (broad)

	Corruption indicator (broad)					Share of audited resources (broad)				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-0.01951	0.07205	0.08196	0.04003	0.13324	-0.00546	0.00065	-0.00026	0.01066	0.03696
	(0.037)	(0.096)	(0.088)	(0.119)	(0.201)	(0.010)	(0.021)	(0.019)	(0.021)	(0.030)
Observations	474	474	333	202	113	441	441	264	187	104
R-squared	0.088	0.095	0.119	0.141	0.192	0.075	0.077	0.121	0.148	0.336

Panel A: Corruption (narrow)

	Corruption indicator (narrow)					Share of audited resources (narrow)				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	0.02957	0.07538	0.06499	0.03580	0.08476	-0.00347	-0.00460	0.00616	0.00829	-0.00184
	(0.046)	(0.107)	(0.106)	(0.139)	(0.224)	(0.005)	(0.007)	(0.008)	(0.010)	(0.010)
Observations	474	474	305	202	113	441	441	226	187	104
R-squared	0.124	0.132	0.140	0.154	0.207	0.072	0.085	0.139	0.135	0.320

Notes: Sample is restricted to races with two candidates. Regressions include state and term intercepts. This table reports the effect of mayor alignment with PT president´s coalition on corruption. Column 1 and 6 present OLS estimation. Column 2 and 7 presents cubic spline polynomial approximations in equation (4). Column 3 and 8 presents RDD as in equation 3 with optimal margin of victory, 20 percent in the left part of panel A, 15 percent in the right part of panel A, 18 percent in the left part of panel B and 12 percent in the right part of panel B. Column 4, 5 and 9,10 presents RDD as in equation 3 with 10 and 5 percent margin of victory, respectively. Corruption indicator (broad) and Corruption indicator (narrow) are dummy variables. Share of audited resources (broad) and Share of audited resources (narrow) are the proportion of resources involved in corruption acts. Robust standard errors, clustered at the municipality, are in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 6. The effect of political alignment on corruption (first term mayors)

Panel A: Corruption (broad)

	Corruption indicator (broad)					Share of audited resources (broad)				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	0.05008	0.11468	0.05416	0.09650	0.09826	0.00951	-0.01309	-0.01258	-0.01776	0.04095
	(0.051)	(0.130)	(0.125)	(0.154)	(0.243)	(0.009)	(0.026)	(0.029)	(0.033)	(0.055)
Observations	291	291	183	138	73	264	264	152	124	64
R-squared	0.111	0.126	0.140	0.159	0.282	0.122	0.139	0.158	0.204	0.616

Panel A: Corruption (narrow)

	Corruption indicator (narrow)					Share of audited resources (narrow)				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	0.07465	-0.02891	0.05046	0.06918	0.24860	-0.00096	-0.01043	-0.01072	0.00104	0.00056
	(0.060)	(0.141)	(0.144)	(0.184)	(0.369)	(0.004)	(0.008)	(0.009)	(0.011)	(0.016)
Observations	291	291	191	138	73	264	264	192	124	64
R-squared	0.146	0.162	0.155	0.218	0.249	0.149	0.158	0.169	0.238	0.506

Notes: Sample is restricted to races with two candidates, for only those who are in their first term. Regressions include state and term intercepts. This table reports the effect of mayor alignment with PT president´s coalition on corruption. Column 1 and 6 present OLS estimation. Column 2 and 7 presents cubic spline polynomial approximations in equation (4).   Column 3 and 8 presents RDD as in equation 3 with optimal margin of victory, 20 percent in the left part of panel A, 15 percent in the right part of panel A, 17 percent in the left part of panel B and 12 percent in the right part of panel B. Column 4, 5 and 9,10 presents RDD as in equation 3 with 10 and 5 percent margin of victory, respectively. Corruption indicator (broad) and Corruption indicator (narrow) are dummy variables. Share of audited resources (broad) and Share of audited resources (narrow) are the proportion of resources involved in corruption acts. Robust standard errors, clustered at the municipality, are in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Remain tables reports the effect of political alignment on several policies. Table 7 reports the effect of alignment with PT president´s coalition on public employment in municipalities. The information of public employment in municipalities is only available for the years 2005, 2006 and 2007. Therefore, results are estimated for the municipalities of the sample restricted to two candidates, one aligned with the president´s coalition and the other no aligned only for the second term. Table 7 panel A show that there is only a positive and significant effect of political alignment on the total number of public employees in OLS regression. On the contrary, column 2-5, show that the effect is not robust for any of the regression discontinuity specifications. Table 7 panel B presents the effect of political alignment on the fraction of temporary public employees. Temporary public employees in the last year of mandate is an indicator of political patronage, and could indicate how mayors are involved in strategic behaviours in order to improve their electoral chances (Brollo & Troiano, 2016). As in Panel A, the effect of alingment with PT presidnet´s coalition is not significant for any of the regression discontinuity specifications, and the effect is only significant in the OLS regression.

Table 7. The effect of political alignment on public employees

Panel A: Public employees

	Public employees				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	31.55386	-31.83619	-2.06346	4.88099	37.48673
	(19.012)*	(41.185)	(41.194)	(44.139)	(58.017)
Observations	1,480	1,480	856	730	391
R-squared	0.248	0.251	0.325	0.344	0.297

Panel B: Fraction of temporary public employees (last year of mayoral mandate)

	Fraction of temporary public employees (last year of mayor´s mandate)				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	0.01517	0.00731	-0.00358	0.00443	0.02537
	(0.009)*	(0.020)	(0.021)	(0.025)	(0.038)
Observations	1,481	1,481	985	730	391
R-squared	0.192	0.194	0.207	0.221	0.250

Notes: Sample is restricted to races with two candidates. Regressions include state intercepts. This table reports the effect of mayor alignment with PT president´s coalition municipal on public employment (panel A) and the fraction of temporary public employees in the last year of the mayor´s mandate (panel B). Column 1 presents OLS estimation. Column 2 presents cubic spline polynomial approximations in equation (4). Column 3 presents RDD as in equation 3 with optimal margin of victory, 22 percent for panel A and panel B. Column 4 and 5 presents RDD as in equation 3 with 10 and 5 percent margin of victory. Public employees variable is the average during 2005-2008 mandate, considering 2005,2006 and 2008 years. Fraction of temporary public employees (last year of mayor´s mandate) is the share of temporary public employees in the last year of mandate. Robust standard errors are in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

Table 8 reports the effect of alignment with president´s coalition on different fiscal policies, all of them in per capita 2000 Brazilian reais. Table 8 Panel A, presents the results on municipal fiscal deficit, measured as the average of the total expenditures minus total revenues. The effect is positive but not significant for any of the RDD specifications. Table 8 panel B, presents the results on total expenditures. The effect is only significant at 10 percent level in the case of the optimal bandwidth estimation (17 percent in this case), but it vanished in the cubic spline estimation and when a margin of victory of 10 and 5 percent is used. Table 8 panel C, estimates the effect of alignment with president´s coalition on total revenues. In this case, the effect is again positive but not significant for any of the specifications considered.

Table 8. The effect of political alignment on fiscal policies

Panel A: Fiscal deficit

	Fiscal deficit				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-5.60976	11.51375	2.06322	2.53849	-2.36558
	(5.863)	(8.738)	(5.969)	(6.202)	(6.874)
Observations	2,449	2,449	1,317	1,080	575
R-squared	0.024	0.026	0.060	0.059	0.202

Panel B: Expenditures

	Expenditures				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-12.93617	46.89999	60.50248	31.46416	25.74594
	(14.906)	(29.994)	(36.409)*	(36.176)	(51.566)
Observations	2,449	2,449	1,586	1,080	575
R-squared	0.282	0.288	0.286	0.355	0.368

Panel C: Revenues

	Revenues				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-8.25495	36.27252	44.05622	28.87957	27.11702
	(13.993)	(29.637)	(30.417)	(37.142)	(53.160)
Observations	2,449	2,449	1,645	1,080	575
R-squared	0.333	0.339	0.358	0.382	0.383

Notes: Sample is restricted to races with two candidates. Regressions include state and term intercepts. This table reports the effect of mayor alignment with PT president´s coalition municipal on fiscal deficit (panel A), total expenditures (panel B) and total revenues (panel C). Column 1 presents OLS estimation. Column 2 presents cubic spline polynomial approximations in equation (4). Column 3 presents RDD as in equation 3 with optimal margin of victory, 13 percent for panel A, 17 percent for panel B and 19 percent for panel C. Column 4 and 5 presents RDD as in equation 3 with 10 and 5 percent margin of victory. Dependent variables are the average during mandate and presented in per capita real values in 2000 Brazilian reais. Robust standard errors, clustered at the municipality, are level in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

In Table 9, I open revenues in its two main categories, current (panel A) and capital revenues (panel B). The latter, includes the federal transfers for infrastructure analysed in table 4. As it is show in panel A, the effect of PT coalition alignment on current revenues is not different from 0 in all the specifications considered. On the contrary, the effect on capital revenues is positive and significant in the local regressions that considered the optimal bandwidth (19) and 10 and 5 percent of margin of victory. This effect is mainly driven by extra resources on infrastructure that received municipalities ruled by mayors aligned with PT president´s coalition.

Table 9. The effect of political alignment on types of revenues

Panel A: Current revenues

	Current revenues				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-11.25361	31.25070	35.13772	21.94070	18.64952
	(13.329)	(28.638)	(30.081)	(35.922)	(50.976)
Observations	2,449	2,449	1,627	1,080	575
R-squared	0.328	0.333	0.349	0.372	0.371

Panel B: Capital revenues

	Capital revenues				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	2.66672	4.53298	6.79583	7.13149	9.30294
	(1.655)	(3.031)	(3.017)**	(3.589)**	(5.013)*
ObservationsT	2,449	2,449	1,477	1,080	575
R-squared	0.148	0.161	0.185	0.216	0.243

Notes: Sample is restricted to races with two candidates. Regressions include state and term intercepts. This table reports the effect of mayor alignment with PT president´s coalition municipal on the two types of revenues: current revenues (panel A) and capital revenues (panel B). Column 1 presents OLS estimation. Column 2 presents cubic spline polynomial approximations in equation (4). Column 3 presents RDD as in equation 3 with optimal margin of victory, 19 percent for panel A and 19 percent for panel B. Column 4 and 5 presents RDD as in equation 3 with 10 and 5 percent margin of victory. Dependent variables are the average during mandate and presented in per capita real values in 2000 Brazilian reais. Robust standard errors, clustered at the municipality, are level in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

In table 10, I consider the effect of political alignment on two of the main types of expenditures in local governments in Brazil. Together, education and health account on average for 50 percent of the total budget and local governments play a major role in the provision of these public services. The effect of political alignment on expenditures on health (per capita) is not significantly different from 0 in any of the specifications presented. The situation is different in educational expenditure. The effect is positive and significant at the 5 percent in the cubic spline regression and in the local regression with the optimal bandwidth (17 percent) at 10 percent. This effect on education represents 9 percent points of increment with respect to the average level. However, this effect vanished once that the local regression reduces the margin of victory and the number of observations

Table 10. The effect of political alignment on health and education expenditure

Panel A: Expenditures per capita on health

	Health				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-1.29186	6.12692	7.82787	2.86984	-1.09142
	(2.951)	(6.235)	(7.651)	(7.659)	(10.738)
Observations	2,449	2,449	1,528	1,080	575
R-squared	0.300	0.302	0.304	0.349	0.362

Panel A: Expenditures per capita on education

	Education				
	OLS	Cubic Spline	Margin of victory optimal	Margin of victory <10	Margin of victory <5
President´s coalition	-2.06071	17.40749	16.86247	12.51360	11.49092
	(3.636)	(7.226)**	(9.892)*	(8.595)	(12.327)
Observations	2,449	2,449	1,517	1,080	575
R-squared	0.182	0.189	0.191	0.258	0.273

Notes: Sample is restricted to races with two candidates. Regressions include state and term intercepts. This table reports the effect of mayor alignment with PT president´s coalition municipal on health and education expenditures. Column 1 presents OLS estimation. Column 2 presents cubic spline polynomial approximations in equation (4).   Column 3 presents RDD as in equation 3 with optimal margin of victory, 16 percent for panel A and 17 percent for panel B. Column 4 and 5 presents RDD as in equation 3 with 10 and 5 percent margin of victory. Dependent variables are the average during mandate and presented in per capita real values in 2000 Brazilian reais. Robust standard errors, clustered at the municipality, are level in brackets. *** Significant at the 1 percent level, ** Significant at the 5 percent level, * Significant at the 10 percent level.

To sum up this section that analyse the effect of political alignment with PT president centre left coalition, results show that i) mayors aligned with PT coalition receive more discretionary federal transfers in their last two years of mandate as it is was shown previously by Brollo & Nannicini, (2012) that analysed a longer period, that includes different president´s coalition, ii) although aligned mayors receive more federal transfers to infrastructure, being aligned do not increase the probability of being involved in corruption acts or an increment in the share of funds involved in corruptions acts, iii) aligned mayors neither increase local public employment and do not make use of political patronage, measured by the fraction of non-permanent public employees in the last year of mandate, iv) mayors of parties members of president´s coalition do not present differences in total expenditures and total revenues, v) there is evidence, although do not robust, that aligned mayor spend more in education, and do no spend more in health

5.4. Validity test

There are some important validity tests that can be performed in a to analyse the validity of the RDD. The first check is the continuity of the margin of victory at the discontinuity point, to disregard the possibility of manipulation of percentage of votes. If this is the case, and for example candidates aligned with the president could manipulate elections we would observe a concentration of observations in the right side of the threshold. This can be tested graphically, as it is shown in the frequencies of margin of victory Figure 2 for races of two candidates. Additionally, I test formally the discontinuity of the density function around the threshold using McCrary (2008) methodology. Results rejects discontinuity, and point estimate of the discontinuity (log difference in height) is -0.08 and standard error (0.087). Graphic of the density function it is shown in Figure 3.

The second check is the continuity of the running variable (Margin of victory) around other covariates of interest. That means that the pre-election variables should be similar between municipalities where candidates aligned with the president´s coalition won and those where they lost. Figure 4-6 presents this graphs for the covariates used for the description of mayor and municipal characteristics. Visual information of these graphs coincides with what mentioned in 4.2 section.

Figure 2. Frequencies of margin of victory.

Two candidate's races, competing aligned versus no aligned mayors.
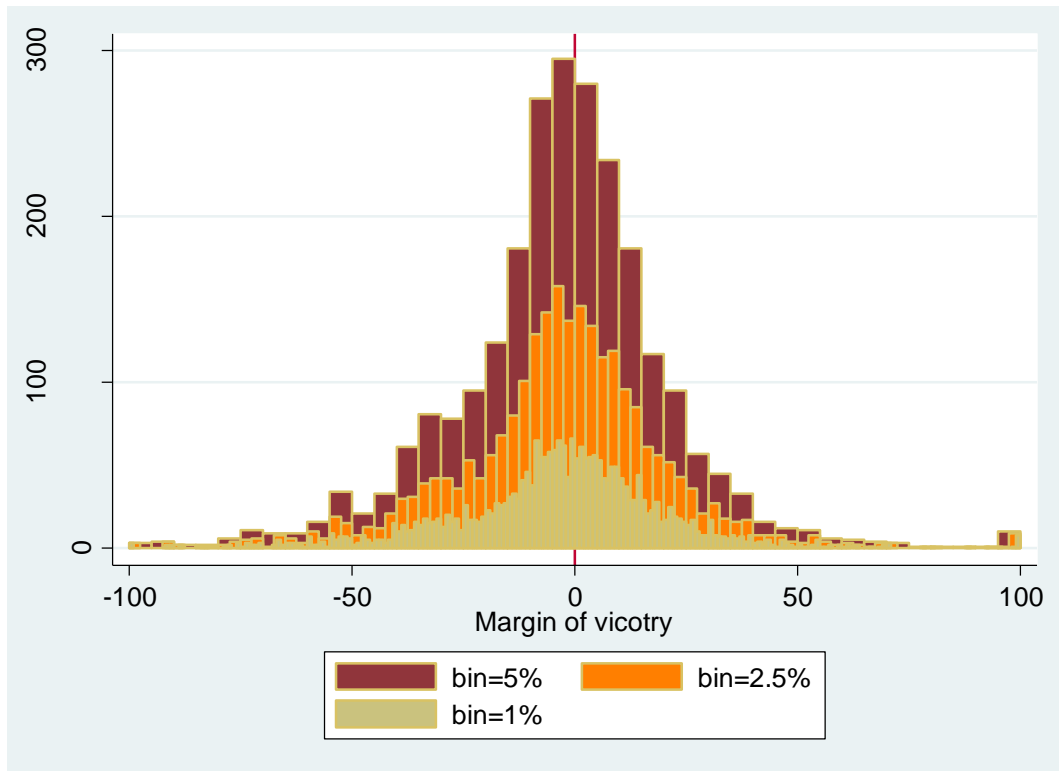
Notes: frequencies of margin of victory for races with two candidates, one aligned with president´s coalition and other no aligned for 2000 and 2004 elections. Margin of victory>0 when the candidate that won the election is aligned with president´s coalition and Margin of victory<0 when the election is won by the candidate no aligned.

Figure 3. McCrary Test, two candidate's races, competing aligned versus no aligned mayors.
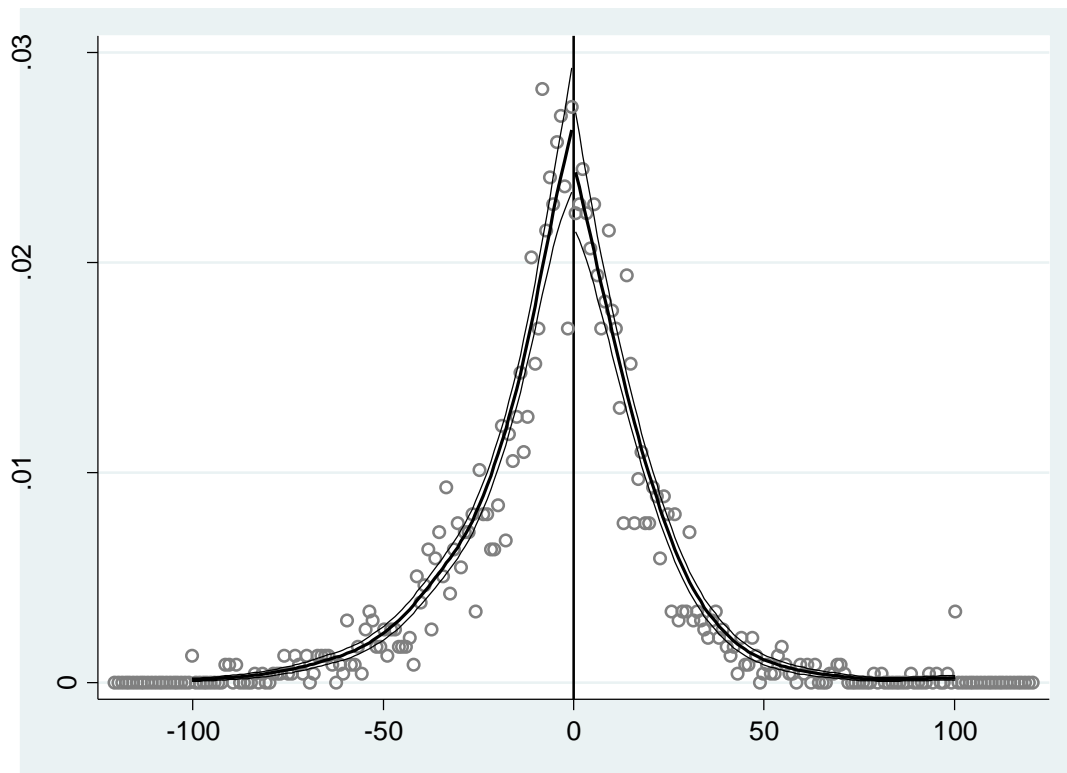

Notes: This graph presents the weighted kernel estimation of log density of the Margin of Victory for candidates aligned with PT president´s coalition, in two candidate's races for 2000 and 2004 elections. Margin of victory>0 when the candidate that won the election is aligned with president´s coalition and Margin of victory<0 when the election is won by the candidate no aligned. Discontinuity estimate (log difference in height): -.079847933 and standard errors (.086781179). Bin size and bandwidth calculated according to McCrary (2008).

Figure 4. Test of discontinuities in mayoral characteristics around the threshold.
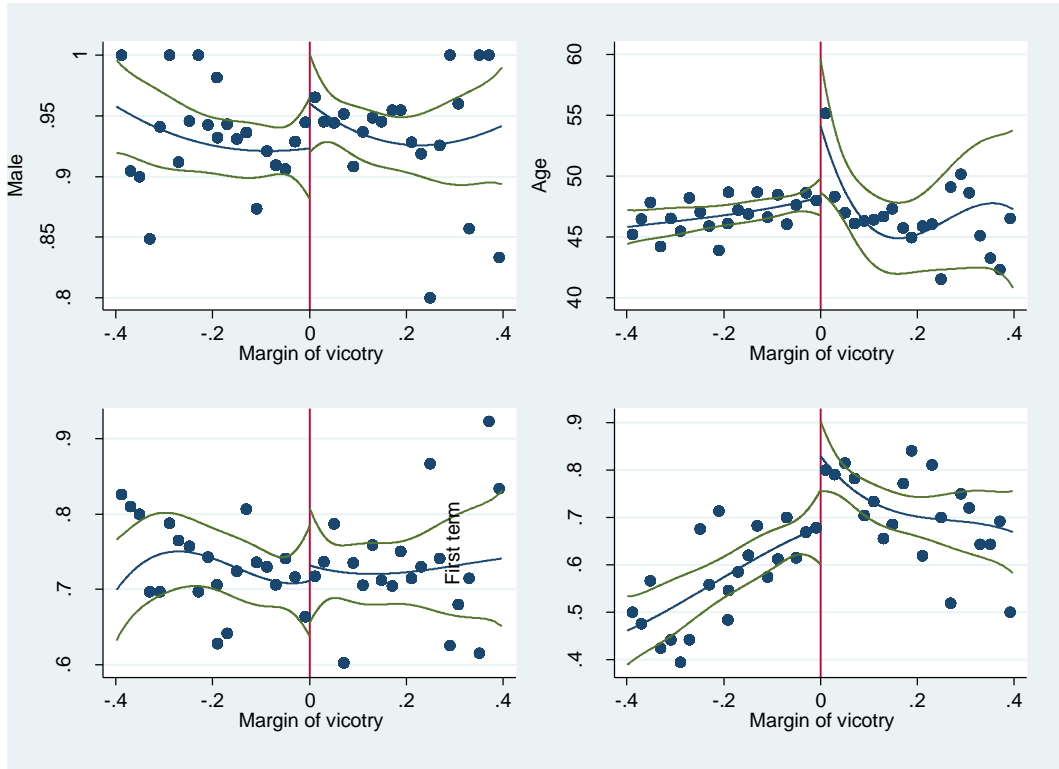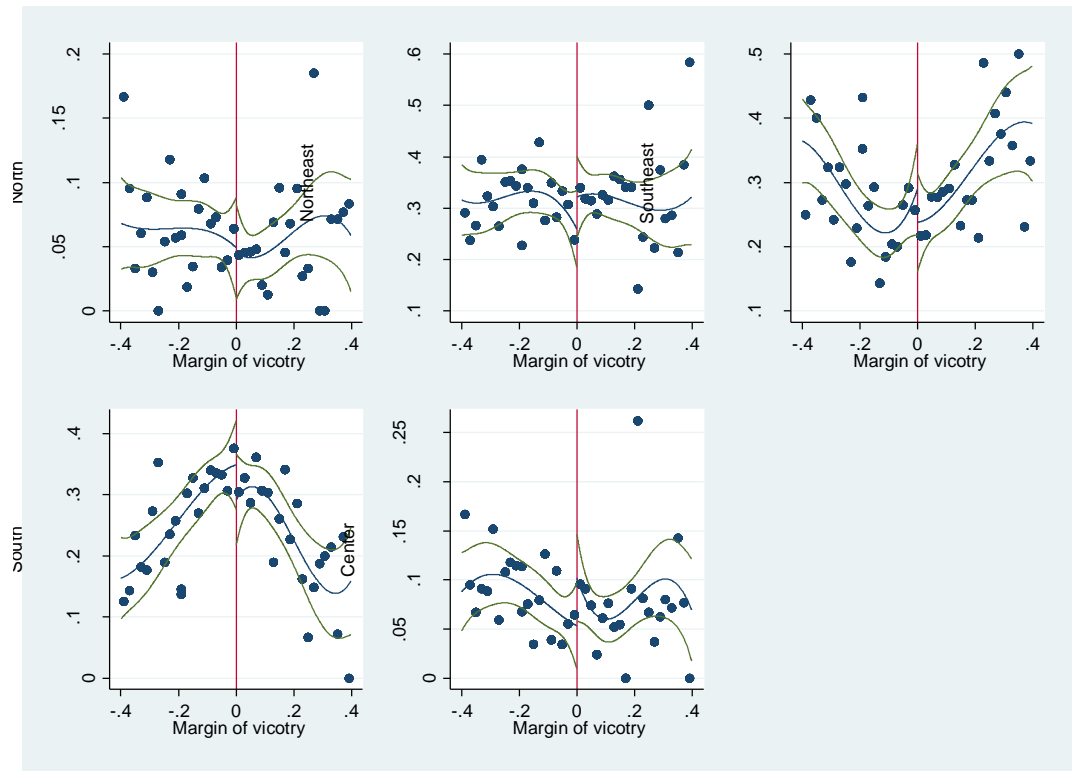
Notes: Test of discontinuities in mayoral characteristics around the threshold. The blue line represents a split third-order polynomial in Margin of Victory of candidates aligned with president´s coalition (Margin of Victory>0) and no aligned (Margin of Victory<0). The green lines represent the 95% confidence interval of the polynomial. Scatter points are averaged over 2% intervals. This sample is restricted to two candidate's races in 2000 and 2004 elections.

Figure 5. Test of discontinuities in municipal characteristics around the threshold.
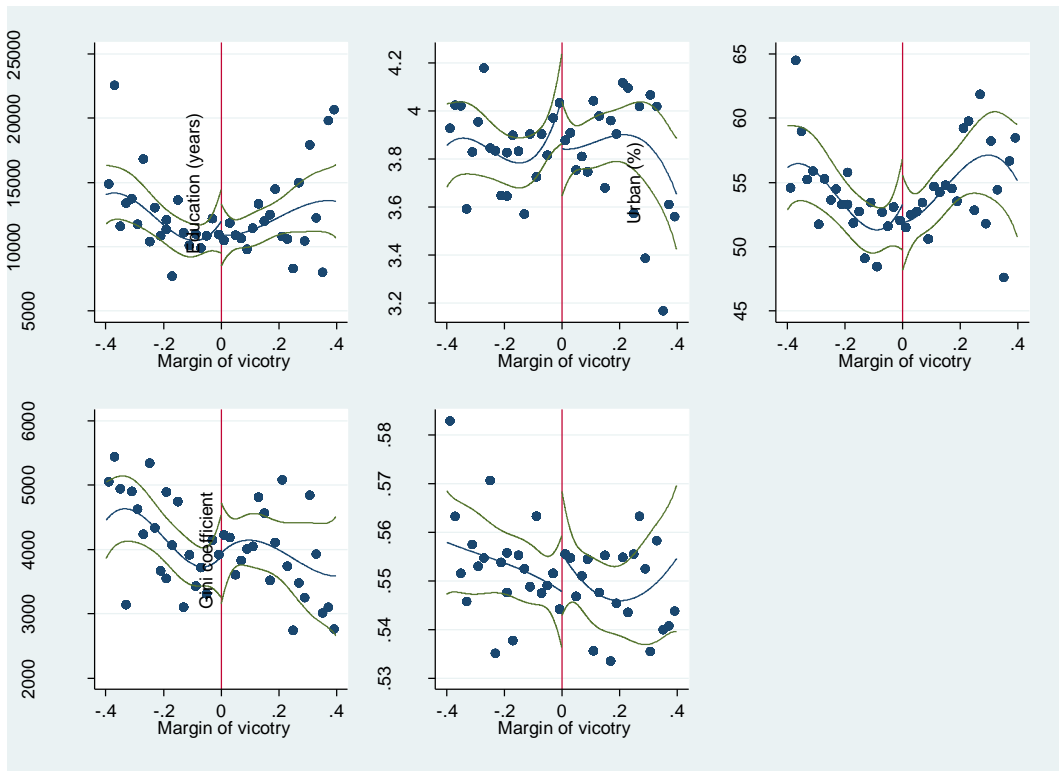
Notes: Test of discontinuities in mayoral characteristics around the threshold. The blue line represents a split third-order polynomial in Margin of Victory of candidates aligned with president´s coalition (Margin of Victory>0) and no aligned (Margin of Victory<0). The green lines represent the 95% confidence interval of the polynomial. Scatter points are averaged over 2% intervals. This sample is restricted to two candidate's races in 2000 and 2004 elections.

Figure 6. Test of discontinuities in macro regions around the threshold.

Notes: Test of discontinuities in macro regions around the threshold. The blue line represents a split third-order polynomial in Margin of Victory of candidates aligned with president´s coalition (Margin of Victory>0) and no aligned (Margin of Victory<0). The green lines represent the 95% confidence interval of the polynomial. Scatter points are averaged over 2% intervals. This sample is restricted to two candidate's races in 2000 and 2004 elections.

6.   Conclusion

Could be present in the context self-interested and more ideological motivations of politicians? How these two apparently opposite motivations can interact in a context of high incidence of corruption? These questions are important because the analyse of incentives of politicians has implications for the discussion about the role of the government and its welfare consequences.

In this dissertation, I try to address these questions analysing the effect of mayors aligned with a centre left coalition on Brazilian municipalities during two mayoral terms, from 2001 and 2008. I focus the analysis on several policy outcomes, including corruption and specific public services, where local governments are important providers.

Empirical evidence suggests that politician's preferences also could be important also in context of high incidence of political agency problems. This result could also complement analyses the "political resource course" developed Brollo et al. (2013). However further research could be useful to understand up to what extent more resource could exacerbate rent extraction o could also increase the provision of important public services such as education. One possibility to extent this work is to analyse specific data of school facilities from educational census or changes in education outcomes of the population. This analysis is relevant for contexts of high inequality such as Brazil, where institutions are fragile but also the necessities of public services high.

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Appendix

Table A1

Party	2001 & 2002	2003 & 2004	2005 & 2006	2007 & 2008
PMDB	YES	NO	NO	YES
PT	NO	YES	YES	YES
PSDB	YES	NO	NO	NO
PFL	YES	NO	NO	NO
PP	YES	NO	NO	NO
PSB	NO	YES	YES	YES
PDT	NO	YES	YES	YES
PL	NO	YES	YES	YES
PTB	NO	YES	YES	YES
PPS	NO	YES	YES	YES
PV	NO	YES	YES	YES
PC do B	NO	YES	YES	YES
PRONA*	NO	NO	YES	YES
PSC	NO	NO	NO	NO
PTC	NO	NO	NO	NO
PSL	NO	NO	NO	NO
PMN	NO	NO	NO	NO
PHS	NO	NO	NO	NO
PT do B	NO	NO	NO	NO
PAN	NO	NO	NO	NO
PRB	NO	NO	NO	NO
PSDC	NO	NO	NO	NO
PSL	NO	NO	NO	NO
PSD	NO	NO	NO	NO
PST	NO	NO	NO	NO
Others	NO	NO	NO	NO

Source (Brollo & Nannicini, 2012). *The political party PRONA merged with PL and PR after 2005.